

**WASHINGTON STATE DEPARTMENT OF ECOLOGY  
P.O. BOX 47600  
OLYMPIA, WASHINGTON 98504-7600**

<b>IN THE MATTER OF:</b>	<b>]</b>	<b>PSD-02-04 AMENDMENT 1</b>
<b>BP Isomerization Project</b>	<b>]</b>	<b>FINAL APPROVAL OF THE</b>
<b>BP Cherry Point Refinery</b>	<b>]</b>	<b>PREVENTION OF SIGNIFICANT</b>
<b>4519 Grandview Road</b>	<b>]</b>	<b>DETERIORATION</b>
<b>Blaine, Washington 98230</b>	<b>]</b>	

Pursuant to the Washington State Department of Ecology (Ecology) general regulations for air pollution sources Chapter 173-400 Washington Administrative Code (WAC) and the federal Prevention of Significant Deterioration (PSD) regulations 40 Code of Federal Regulations (CFR) 52.21, and based upon the Notice of Construction (NOC) application submitted by BP Cherry Point Refinery (BP) on July 29, 2002, the additional information submitted on September 6, 2002, December 17, 2002, February 5, 2003, October 1, 2004, and the technical analysis performed by Ecology, Ecology now finds the following:

**FINDINGS**

1. BP was approved to construct and operate a Clean Gasoline Project at its Cherry Point Refinery in Whatcom County, Washington under PSD PSD-02-04 in May 2003. This project is referred to as the "Isomerization Project" or "project".
2. The purpose of the project was to enable BP to process light naphtha feedstocks to produce a gasoline blend component that has essentially no benzene, olefins, or sulfur, and is higher in octane than its feed. The project consists of a Naphtha Dehexanizer unit, an Isom Hydrotreater (IHT) that includes a 13 million British thermal unit per hour (MMBtu/hr) IHO process heater, a BenSat™ unit, a Penex™ (Isomerization) unit, connections to existing processes and changes in tank services within the refinery, and a new 363 MMBtu/hr boiler (a replacement for Boiler #2, now identified as Boiler #5).
3. Amendment 1 proposes to modify the Boiler #5's NO<sub>x</sub> and CO emission limits, add boiler startup provisions and make some housekeeping changes to permit conditions. This is needed because the new technology boiler could not meet the originally permitted limits throughout its full range of operation. Amendment 1 does not propose any physical modifications to the original project.
4. This project is subject to New Source Performance Standard (NSPS) 40 CFR 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units for Boiler #5.
5. The BP Refinery is an existing major stationary source that emits more than 100 tons of a regulated pollutant per year.
6. The BP Isomerization project is located in an area that is designated as "attainment" for the purposes of PSD permitting for all pollutants.
7. This project is subject to PSD permitting because emissions of nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO) have "significant" emission increases greater than 40 tons per year and 100 tons per year, respectfully.

8. Emissions of all other pollutants are subject to NOC permitting requirements by the Northwest Clean Air Authority (NWCAA).
9. The initial project resulted in an increase of NO<sub>x</sub> emissions of up to 65 tons per year. Amendment 1 proposes to increase this allowable increase from 65 to 81 tons per year.
10. The initial project resulted in an increase of CO emissions of up to 113 tons per year. Amendment 1 proposes no increase in annual CO emissions.
11. Best Available Control Technology (BACT) determinations and proposed control technologies are shown in Table 1:

**Table 1: BACT Determinations with Proposed Control Technology**

Unit	Pollutant	BACT	Control Technology
IHT Process Heater	NO <sub>x</sub>	0.10 lb/MMBtu and 0.455 lb/hr on a calendar day average	Ultra Low NO <sub>x</sub> Burners (ULNB)
	CO	70 ppmvd @ 7% O <sub>2</sub> and 1.1 lb/hr on a calendar day average	Good combustion practices
Boiler #5	NO <sub>x</sub>	10.1 pounds per hour (lb/hr) on a calendar day average	ULNB plus Flue Gas Recirculation (FGR)
	CO	18.1 lb/hr on a calendar day average	Good combustion practices

12. This project is located in an area that has been designated Class II for the purposes of PSD evaluation. The distances to the nearest Class I areas are shown in Table 2:

**Table 2: Distances to Nearest Class I Areas**

Class I Area	Distance in Kilometers
Alpine Lakes Wilderness	156
Glacier Peak Wilderness	109
North Cascades National Park	80
Olympic National Park	113
Pasayten Wilderness	124

13. Maximum impacts of the proposed emissions from this project do not exceed the allowable increments in nearby Class II areas, or in the closest Class I Area (North Cascade National Park) as shown in Table 3.

**Table 3: Annual Impacts of Proposed Maximum NO<sub>2</sub> Emissions from the BP Isomerization Project**

Pollutant	Averaging period	Project Maximum Class II Concentration (µg/m <sup>3</sup> )	Refinery Class II Increment Consumption (µg/m <sup>3</sup> )	Allowable Class II Increment (µg/m <sup>3</sup> )	Maximum Class I Concentration (µg/m <sup>3</sup> )	Allowable Class I Increment (µg/m <sup>3</sup> )
NO <sub>2</sub>	Annual	1.20	1.17	25	0.0027	2.5

14. The project will have no significant impact on ambient air quality.
15. The project will not have a noticeable effect on industrial, commercial or residential growth in the Blaine area.

16. Visibility, deposition, and other air quality related values are not expected to be significantly impaired at the Alpine Lakes Wilderness, Glacier Peak Wilderness, North Cascades National Park, Olympic National Park, Pasayten Wilderness Class I Areas, or the Mt. Baker Wilderness Class II Area.
17. Ecology finds that all requirements for PSD have been satisfied and will comply with all applicable federal NSPS. Approval of the PSD application is granted subject to the following conditions.

**APPROVAL CONDITIONS:**

1. The IHT process heater and Boiler #5 shall be fueled by either natural gas or refinery fuel gas. Continuous compliance shall be monitored by maintaining a written log of the type of fuel burned in the IHT process heater and Boiler #5.
2. Emissions of NO<sub>x</sub> from the IHT process heater shall not exceed 0.10 lb/MMBtu or 0.455 pounds per hour on a calendar day average.
  - 2.1. Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
  - 2.2. Within 60 days of achieving maximum production rate, but no later than 180 days, the IHT process heater shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 2.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
  - 2.3. Continuous compliance shall be monitored by annual source testing in accordance with 40 CFR 60 Appendix A, Method 7E. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
3. Emissions of NO<sub>x</sub> from Boiler #5 shall not exceed 10.1 pounds per hour on a calendar day average.
  - 3.1. Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
  - 3.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, Boiler #5 shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 3.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
  - 3.3. Continuous compliance shall be monitored by a Continuous Emission Monitor (CEM) for NO<sub>x</sub> and O<sub>2</sub>. The CEMs must meet Performance Specifications 2 and 3 of 40 CFR 60, Appendix B, and quality control/quality assurance requirements of 40 CFR 60, Appendix F.
4. Emissions of CO from the IHT process heater shall not exceed 70 ppm<sub>dv</sub> at 7 percent O<sub>2</sub> or 1.1 pounds per hour, both on a calendar day average.
  - 4.1. Compliance shall be determined by annual source testing in accordance with 40 CFR 60 Appendix A, Method 10, 10A, 10B, or an equivalent method approved in advance by Ecology.
  - 4.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, the IHT process heater shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 4.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.

- 4.3. Continuous compliance shall be monitored by annual source testing for CO in accordance with 40 CFR 60 Appendix A, Method 10, 10A, or 10B. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
5. Emissions of CO from Boiler #5 shall not exceed 18.1 pounds per hour on a calendar day average.
  - 5.1. Compliance shall be determined by annual source testing in accordance with 40 CFR 60 Appendix A, Method 10, 10A, 10B, or an equivalent method approved in advance by Ecology.
  - 5.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, Boiler #5 shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 5.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
  - 5.3. Continuous compliance shall be monitored by a CEM for CO and O<sub>2</sub>. The CEMs must meet Performance Specifications 3, 4, 4a, and 4b of 40 CFR 60, Appendix B and quality control/quality assurance requirements of 40 CFR 60, Appendix F.
6. Startup conditions for Boiler #5
  - 6.1. Emission limits for CO in Condition 5 are relieved during startup periods.
  - 6.2. Emissions of CO during startup periods shall be limited to 50 pounds per hour averaged over the startup period.
  - 6.3. Emissions of CO during startup periods shall be monitored and included in the annual emissions reported each year pursuant to WAC 173-400-105(1).
  - 6.4. Startup periods are limited to 12 hours, except that if refractory work has been done during a maintenance shutdown, the period is limited to 30 hours.
  - 6.5. Startups claiming use of this condition shall be limited to six per calendar year.
7. BP shall submit the following reports and monitoring data to NWCAA and Ecology. Once this permit has been incorporated in to BP's Title V permit, these submittals no longer need to be sent to Ecology.
  - 7.1. Submit copies of each required source test performed on emission units regulated by this order.
    - 7.1.1. BP shall submit a test plan to Ecology and NWCAA at least 30 days in advance of any test date required under this Order.
    - 7.1.2. BP shall notify Ecology and NWCAA at least two weeks in advance of the exact test date.
  - 7.2. Submit a report monthly, within 30 days of the end of the calendar month, or on another schedule agreed to by Ecology and NWCAA. At the least, the report shall include the following:
    - 7.2.1. Calendar date or monitoring period.
    - 7.2.2. Monthly maximum of NO<sub>x</sub> emissions for each regulated unit for the reporting month in accordance with Approval Conditions 2 and 3.
    - 7.2.3. Monthly maximum of CO emissions for each regulated unit for the reporting month in accordance with Approval Conditions 4 and 5.

- 7.3. In addition, required report shall include:
  - 7.3.1. Days and duration for which data was not collected.
  - 7.3.2. Reasons for which data was not collected.
  - 7.3.3. A statement that BP burned no new fuels, no fuels from a new supplier, or no new fuel mixture.
- 7.4. BP shall maintain monitoring records on site for at least five years, and shall submit:
  - 7.4.1. Excess emission reports to NWCAA, as discussed in Approval Condition 7.5.
  - 7.4.2. Results of any compliance source tests.
- 7.5. For each occurrence of monitored emissions in excess of any condition, the monthly emissions report shall include the following:
  - 7.5.1. The time of the occurrence.
  - 7.5.2. Magnitude of the emission or process parameters excess.
  - 7.5.3. The duration of the excess.
  - 7.5.4. The probable cause.
  - 7.5.5. Corrective actions taken or planned.
  - 7.5.6. The name of any agency contacted.
8. Sampling ports and platform shall be provided on each stack, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate permanent and safe access to the test ports shall be provided.
9. BP shall notify Ecology and NWCAA in writing at least thirty days prior to startup of IHT process heater and Boiler #5 at least 30 days prior to the initial startup.
10. Within 90 days of startup, BP shall identify operational parameters and practices that will constitute "good combustion practices" of the IHT process heater and Boiler #5. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA, or EPA. Emissions that result from a failure to follow the requirements of the O&M manual may be considered credible evidence that emission violations have occurred.
11. Access to the source by Ecology, NWCAA, or the EPA, shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act or the Washington State Clean Air Act.
12. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18 month period, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

**Reviewed by:**

Robert C. Burmark  
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Technical Services Section  
Air Quality Program  
Washington State Department of Ecology

DATE: April 20, 2005



**Approved by:**

Stuart A. Clark  
Stuart A. Clark  
Program Manager  
Air Quality Program  
Washington State Department of Ecology

DATE: April 20, 2005

**Appendix 1: Summary of Emission Limits**

The table below is a listing of the emission limits contained in this permit. If there are any discrepancies between this table and the Approval Conditions above, the Approval Condition terms should be used.

Emission Unit	Pollutant	Limit	Averaging Time	Test Method
IHT Process Heater	NO <sub>x</sub>	0.10 lb/MMBtu	Calendar day	Annual Source test with 40 CFR 60 Appendix A Method 7E
		0.455 lb/hr	Calendar day	
	CO	70 ppmv @ 7% O <sub>2</sub>	Calendar day	Annual Source test with 40 CFR 60 Appendix A Method 10, 10A, or 10B
		1.1 lb/hr	Calendar day	
Boiler #5	NO <sub>x</sub>	10.1 lb/hr	Calendar day	Method 7E and CEM
	CO	18 lb/hr	Calendar day	Method 10, 10A, or 10B, and CEM